

USAWC STRATEGY RESEARCH PROJECT

**STRATEGIES FOR COST CUTTING: CASE STUDY  
OF AN ARMY AND AIR FORCE PETROLEUM LAB**

by

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This SRP is submitted in partial fulfillment of the requirements of the Master of Strategic Studies Degree. The views expressed in this student academic research paper are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

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## ABSTRACT

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In view of the tightening of our military budget and increasing size of our deficit, this SRP examines the feasibility of cost-cutting within our own services, with emphasis upon the possibility of combining similar efforts among sister services in order to see whatever efficiencies can be gained through joint acquisition. This study examines two Petroleum Labs (Army—505<sup>th</sup> Quartermaster Fuels Laboratory and Air Force—Detachment 44 Aerospace Fuel Laboratory) located in Okinawa, Japan.



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## **STRATEGIES FOR COST CUTTING: CASE STUDY OF AN ARMY AND AIR FORCE PETROLEUM LAB**

The Base Realignment and Closure (BRAC) Commission is scheduled to convene again in 2005. BRAC was created by authority of the Defense Closure and Realignment Act of 1990. Three previous commissions met in 1991, 1993, and 1995. The BRAC Commission consists of a Commissioner nominated by the President and approved by Congress and a staff of assigned personnel from the Department of Defense (DoD). By charter the Commission is required to determine the process for identifying bases to be closed or realigned, identify bases to be closed or realigned, and report findings and recommendations to the President with Congressional oversight.

DoD has formed six BRAC Joint Cross Groups that provide strong oversight of service analysis through a committee system, that considers initiatives that have high potential for cross-servicing. These six groups consider the feasibility of Joint DoD ventures in the following areas:

- Laboratories
- Test & Evaluation
- Military Medical Treatment Facilities
- Under-Graduate Pilot Training
- Economic Impact
- Depot Maintenance

So a critical consideration in BRAC recommendations is the consolidation of DoD functions and activities to gain efficiency and cut overall costs. Prior to and during the BRAC 2005 session, the OSD will submit recommendations to BRAC for consideration. Recommendations are based on findings of the various Joint Service Agencies, Committees, and Teams, including the Joint Cross Groups.

### **BACKGROUND**

In July 1994 the Assistant Deputy Under Secretary for Material and Resources Management Policy in the Office of the Under Secretary of Defense (ODUSD(L)MRM) concurred with the Inter-Service Agency for Petroleum Laboratory Assessment Team's (PLAT) recommendation to establish a Defense Petroleum Laboratory Council (DPLC) to periodically assess petroleum laboratory redundancies. The DPLC consists of representatives from the Army, Air Force, Navy, and Defense Logistics Agency (DLA); it reports to the ODUSD(L)MRM.

The Department of the Army assigned the responsibility for servicing the DPLC to the Troop Support Division for Sustainment, under the G-4 Staff formally known as the Deputy Chief of Staff for Logistics. Using my knowledge and experiences as a former Army G-4 Staff Officer, with a specialized background in Petroleum Logistics and strong ties to the Petroleum Departments of the Army, in this SRP I will review, analyze and make recommendations on DPLC issues with the following three objectives:

- Validate individual laboratory requirements and capabilities.
- Determine whether redundant facilities and capabilities exist and can be reduced.
- Determine the most efficient management structure for petroleum laboratories.

## **PURPOSE**

This SRP will provide Mr. Wayne Kabat (GS-13/Col (Ret)), an Action Officer working in the Troop Support Division for Sustainment, under the Army G-4 Staff with an analysis that can be used as a tool to examine the feasibility of cost cutting within the Army. This SRP also examines the possibility of combining similar efforts among sister services to facilitate transformation, and to exploit economies that could be gained from combining missions.

## **GOAL**

This analysis may serve to validate laboratory requirements and capabilities, may determine if redundant facilities and capabilities exist and can be reduced, and may determine the most efficient management structure for two Petroleum Labs (Army and Air Force) that are currently located within close proximity. The SRP concludes with recommendations for consideration by the Troop Support Division for Sustainment under the Army G-4 Staff for possible submission to the PLAT and OSD for review prior to the 2005 BRAC session.

## **SCOPE**

This study focuses on two fuel laboratories, one Air Force and the other Army. Alternative locations (other than where current structures stand) and construction of new labs will not be considered due to the enormous costs involved and the delay of gathering information that would support these findings. This study is time limited to the following researchable areas:

- Past studies conducted by the Army and Air Force petroleum and fuel departments.
- A survey questionnaire administered to both service labs to gather information on their organization, workload, and testing capabilities.

- Documentation – applicable information gathered from laboratory and staff offices-- including mission statements, job descriptions, blueprints, historical documents, and standard operating procedures.

#### **DECISION CRITERIA**

This study uses three decision criteria to examine the feasibility of cost-cutting between the two services:

- Available space – Can the labs be consolidated without inhibiting or degrading either's operational mission?
- Efficiency – Are both labs currently efficient in their operations in terms of customer satisfaction and ability to meet mission requirements? Could they continue to be efficient operating jointly in one facility?
- Cost – What can be gained in dollars and/or improved operations through consolidation?

#### **HISTORICAL RESEARCH (1982 STUDY OF PETROLEUM TEST LABORATORIES, OKINAWA)**

In February 1982 with the objective of identifying and eliminating duplication of support services within its geographical area, Headquarters, United States Forces Japan, Defense Retail Inter-service Support (DRIS) Program identified the existence of three separate Petroleum Test Labs on Okinawa. As a result, a Joint Inter-service Resource Study Group (JIRSG) was formed. The four members of the JIRSG represented the Air Force, Army, Navy, and Marine Corps. Their mission was to determine the feasibility of consolidating three existing Petroleum Laboratories on Okinawa: the Army Petroleum Distribution System Lab (505<sup>th</sup> Quartermaster Battalion), Air Force Logistics Command Energy Directorate (Air Force Detachment 44), and 18<sup>th</sup> Supply Squadron.

The ensuing JRSIG's 12-page report described the characteristics of all three labs in three parts: mission, workload/capability, and authorized personnel.

The 18<sup>th</sup> Supply Squadron was not identified for elimination, because of the nature of its mission and size of the facility. The mission of the squadron was to draw a sample of fuel from aircraft on the flight-line, analyze it, and communicate results to the aircraft commander prior to take-off. Thus its close proximity to the flight-line was required. This test lab consist of two very small facilities on the flight-line. The two remaining labs, hereinafter inferred to as the 505<sup>th</sup> and Detachment 44 on, were studied for feasibility of consolidation.

At the time of the 1982 study, the 505<sup>th</sup> Lab had the following characteristics:

- Authorized 8 personnel.
- Annual workload of 3,167 samples analyzed.
- Mission – insure quality of all petroleum products destined for use by all US Forces in Okinawa.

Detachment 44 characteristics:

- Authorized 5 personnel.
- Annual workload of 200 samples analyzed, however workloads vary greatly from year to year depending on the customers' needs.
- Mission – provide quality and control analysis of jet fuel and gases for all military units in the Pacific Theater.

The results of this study are cited below:

“3. Results of Study:

- a. At present there is little or no direct duplication of effort between the three laboratories located on Okinawa. Each laboratory is established in accordance with appropriate regulations to perform a specific mission or tasking.
  - (1) The 18<sup>th</sup> Supply Squadron base fuels laboratory has an extremely limited product analysis capability (JP-4, JP-7) and is primarily supportive of the Kadena AB flying mission. Its daily activities are directly related to the scheduled activities of the user (aircraft) of the product and this generates time and geographical constraints not common to the other laboratories.
  - (2) The U.S. Army Laboratory is established to perform a direct support for the U.S. Army Petroleum Distribution System, Okinawa, (PDSO), the single agency charged with the distribution of all bulk petroleum products throughout Okinawa. The activities of the laboratory are directly tied to the activities of the Petroleum Division as it receives, stores, and issues DLA owned products to authorized customers in this area.
  - (3) The Directorate of Energy Management Laboratory is established to provide quality control testing for special turbine fuels (JP-7, JP-TS), aviators breathable oxygen (ABO) and compressed breathable air (CBO). It also provides a JP-4, JP-7, and JP-TS correlation program with all other

PACAF base fuel laboratories. These activities, however, do not directly correlate with any specific Department of Defense activity or mission.

- b. There is, however, duplication of testing capability. Each laboratory at this time possesses the necessary equipment and personnel to perform the minimum analysis on all products within their area of responsibility. Both the U.S. Army and the Energy Management Laboratory are in the process of upgrading their capability with the purchase of state –of- the-art equipment. The new equipment will provide better and expanded analysis results of existing products and, in some cases, will allow the introduction of new products into the laboratories for testing. Both the U.S. Army and Energy Management Laboratory possesses personnel who are highly qualified, motivated and, given the proper equipment, can, with a minimum of training, perform the required analysis on any product desired.
  - c. In considering the possible alternatives, the 18<sup>th</sup> Supply Squadron laboratory was deemed not to be a viable candidate for consolidation with the other laboratories. The Supply laboratory does not possess the equipment/facilities or qualified personnel to assume the roles of the other two laboratories. Nor, due to the time and geographical constraints of its mission, could its functions be assimilated into another laboratory. Thus given, two alternatives remained: (1) Energy Management Laboratory assume the mission of the U.S. Army PDSO, (2) U.S. Army assume mission of the Energy Management Laboratory.
4. Assumptions:
- a. Both alternatives assume the consolidation will occur in the present U.S. Army Laboratory, thus vacating the facilities now occupied by the Energy Management Laboratory.
  - b. Both alternatives assume the transfer of mission will be accompanied by the transfer of the necessary equipment to perform that mission.
  - c. Both alternatives assume that no formal training will be required to operate above mentioned equipment.
  - d. Both alternatives assume the transfer of two personnel authorizations will accompany the transfer of mission.
5. Cost Analysis:
- a. Alternative 1: Energy Management Laboratory assumes the mission of the U.S. Army/PDSO Laboratory.
    - (1) Personnel Savings.....GS-11 x 1 = 31,212



.....	E-4 x 2 = 31,386
.....	BWT 1-05 (Step 15) x 2 = 32,466
.....	BWT 1-05 (Step 14) x 1 = 15,181
.....	BWT 1-05 (Step 11) x 1 = 10,479
.....	BWT 1-05 (Step 18) x 1 = <u>11,721</u>
.....	132,445
.....	Minus E-3 x 2 = <u>26,036</u>
.....	Total Personnel Saving.....106,409
(2) Facility Savings. Acquisition Cost of Bldg 854.....	32,000
.....	Total Savings.....138,409

b. Alternative 2: U.S. Army/PDSO Laboratory assumes the mission of the Energy Management Laboratory.

(1) Personnel Savings.....	0-4 x 1 = 43,891
.....	E-6 x 1 = 21,622
.....	GS-9 x 1 = 25,850
.....	GS-12 x 1 = 32,496
.....	E-4 x 1 = <u>15,693</u>
.....	139,552
.....	Minus BWT 1-04 x 2 = 20,958
.....	Total Personnel Savings.....118,594
(2) Facility Savings. Acquisition Cost of Bldg 854.....	32,000
.....	Total Savings.....150,594

c. Above figures have been validated by Comptroller, 313AD, Kadena AB, Japan.

6. Recommendations.

- a. That the 18<sup>th</sup> Supply Squadron base fuels laboratory remain a separate entity and its activities not be considered for consolidation. Rationale based on (1) time sensitivity of analysis requirements in support of National Command Authority directed missions and, (2) mobility requirement of laboratory personnel in support of deployed aircraft.
- b. That the U.S. Army/PDSO laboratory remain a separate entity and assume the entire activities of the Energy Management Laboratory. Rationale based on (1) ability to assume testing functions and responsibilities of Energy Management Laboratory and, (2) demonstrated requirement of the laboratory to remain an integral part of PDSO in support of its petroleum distribution mission. “1

Analysis of results: This study was approved by the Army, Navy, and Marine Corps, but the Air Force rejected it for the following reasons:

- Study was not coordinated through the Air Logistics Center at San Antonio, Texas.
- Study should have been staffed through the manpower office to determine personnel authorizations for consolidation.
- Study did not address security clearance level necessary to test JP-7 (operating procedures for testing of JP-7 required a security clearance which the local Japanese lab technicians did not have).
- Det 44 is the only facility in the Pacific Command with the capability to test Aviator's Breathing Oxygen (ABO). The personnel assigned to Det 44 are specially trained throughout their military and civilian careers and receive additional specialized training prior to assignment to Okinawa. The positions, as stated under the consolidated concept, eliminate the training and expertise necessary for this mission.
- Increased testing requirements are already assigned to Det 44 and were not considered by the study. Programmed workload increase is in excess of 600 samples, above what is already being tested (AVG 200 samples).

The non-concurrence of the Air Force went unchallenged until May 1987, when the DoD Inspector General's Observation Report tasked the US Pacific Command to consider establishing a single consolidated facility. The JIRSG report was again used as the justification for consolidation. Again the Air Force demurred citing the same five reasons for non-concurrence.

My analysis reveals that all five reasons for the 1980s Air Force non-concurrence no longer apply, consider the following current findings:

**1982 Study**

Not coordinated Air  
Logistics Center

Not coordinated  
Manpower Office  
Required Security clearance  
For JP-7 testing

**Present**

Is being coordinated with  
Logistics Center

Is being coordinated with  
Manpower Office  
JP-7 is no longer being used in  
our fuel system

Only lab in the Pacific With ABO test capability	505 <sup>th</sup> can now accommodate ABO testing
Workload increase of 600 samples	Workload is now over 1000 samples

TABLE 1. 1982 STUDY VS. PRESENT

## ORGANIZATIONAL REVIEW AND ANALYSIS

These two labs have basically the same responsibilities for ensuring the quality of all the petroleum products destined for use by DoD agencies on Okinawa. The tested petroleum products include: bulk and packaged fuel products such as lube oils, greases, hydraulic fluids, fuel additives, etc... All testing is performed on a non-reimbursable basis (free of charge). To determine a product's quality, certain chemical and physical tests are performed; results are then compared to the specification requirements for that particular product. Unlike the 505<sup>th</sup>, the Air Force lab can test gaseous products such as nitrogen, helium, oxygen, etc... Both labs provide technical advice and guidance to commanders and customers with regard to quality problems including quality control procedures, sampling techniques, and recommendations for disposition of products that fail to meet specifications.

These two organizations are mostly horizontally structured. Decision-making is basically informal, and all important decisions are centralized in the office of the Lab Supervisor (505<sup>th</sup>) and Commander (Det 44) because of the relative simplicity of issues and ability to obtain key information quickly within labs. This simple structure is effective in both organizations because of their small size, and because workers share a common experience and goals with minimal ambiguity. An overview of the two organizations follows:

- 505<sup>th</sup> Quartermaster Battalion Lab (see Figure 1 next page).
  - Lab Supervisor – primarily responsible for the day-to-day operations of the laboratory. Leads the team of military, civilian, and military labor contingent (MLCs are local Japanese workers) in scheduling, coordinating, and evaluating chemical analysis tests.
  - Army Lab Chemist – performs supportive technical work in the lab and in the field in support of Army field exercises or deployments.
  - Marine Lab Chemist – performs supportive technical work in the lab and in the field in support of Marine field exercises or deployments.

- MLC Administrative Clerks – local Japanese personnel that perform a wide variety of administrative and clerical support to the lab.
- MLC Lb Chemist – local Japanese specialist that performs supportive technical work in the lab.

## 505<sup>th</sup> QM BN LAB

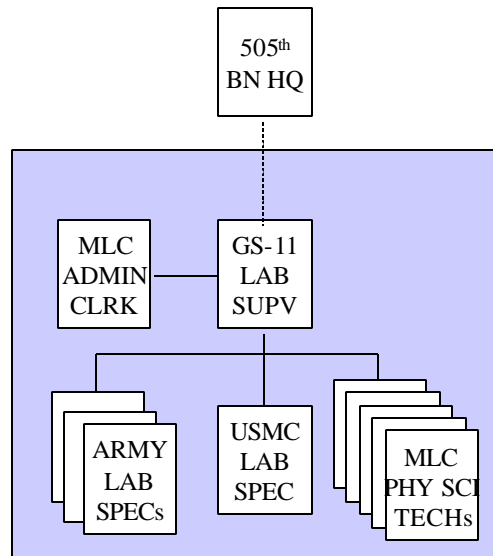


FIGURE 1. 505<sup>TH</sup> QM BN LAB

- Air Force Detachment 44 (see Figure 2 below),
  - Commander – exercises command authority over lab staff by ensuring that the quality of all fuels and gases are tested, that operational support is delivered to supported units, and that property and assets assigned to the lab are properly accounted for.
  - Superintendent – leads the team of military and civilian personnel in scheduling, coordinating, and performing chemical analysis tests and quality control standards.
  - Administrative Assistant – performs administrative and supply functions for the lab.
  - Chemist – provides technical support for the lab and tests at field site for fuel contamination.

## USAF DET 44 LAB

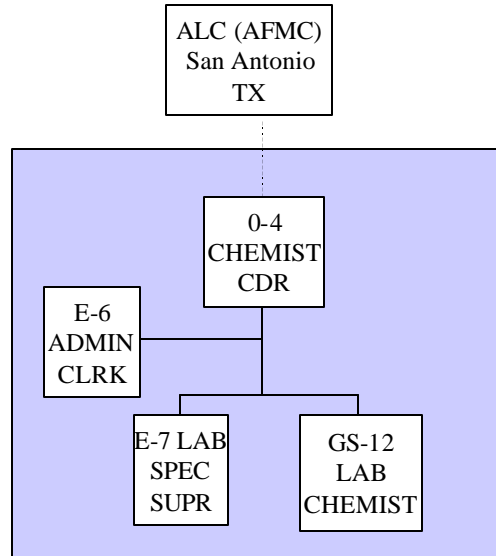


FIGURE 2. USAF DET 44 LAB

Both the supervisor and commander are responsible for evaluating the performance of each laboratory worker. The power of the 505<sup>th</sup> Supervisor is limited to administrative counseling when conflicts arise. But the Supervisor must seek the Battalion Commander's authority for harsher punishment than administrative counseling. The Detachment 44 Commander has direct authority for administering punishment similar to that of a Battalion Commander. Delegation of control is handed to the next senior person in the military/civilian rank structure, should either the supervisor or commander be absent.

Challenges and Possible Solutions. Many in the Air Force and Army community fear that combining organizations into a joint activity means a loss of autonomy and identity. Somewhere between the two sides a common ground will hopefully develop to do the right thing, that is – to combine where economies of scale can be gained by reducing redundancies in organizations. As deeper cuts are made in the defense budget, fear of losing service autonomy and identity goes unrelieved. In fact, services become even more determined to protect their activities from

consolidating with other services. This malaise was quite evident during my interaction with Air Force and Army staff agencies associated with this case study.

The two organizations definitely reveal duplication in their organizations, responsibilities, and capabilities. Benefits from consolidating the two labs have the potential of eliminating redundancies and improvement of efficiency through pooling of resources.

## **SURVEY AND SITE ANALYSIS**

Detachment 44: Aerospace Fuels Lab, Det 44 was established in 1950. The facility they currently occupy was once a bank building. Det 44's mission and capabilities include the testing of jet fuels JP-8, JP-5, and JP-4, selected chemicals, packaged petroleum products, compressed air, and aviator's breathing oxygen (ABO).

On an annual average Det 44 tests 1,117 samples. The breakdown of samples tested includes:

- 50% Gases (compressed air, ABO)
- 18% Lubricating oils and hydraulic fluids
- 10% Special fuels
- 8% Ground fuels (diesel, mogas)
- 2% Chemicals
- 8% Miscellaneous

Customer workload distribution for the samples tested was: 74% Air Force, 18% Navy, 6% Army, 2% other.

Det 44 is housed in a 2,000 square foot concrete block building structure. Within this building are 1,710 Sq/ft of lab space and 280 Sq/ft of administrative space. It is resourced with \$523K of lab equipment and furnishings. Its total annual average operating cost is \$309K.

505<sup>th</sup> Battalion: The 505<sup>th</sup> Quartermaster Battalion was established in 1980. The lab's mission and capabilities include the testing of all fuels, which are off-loaded from Ocean Tankers, stored, or moved through the pipeline in Okinawa. The lab ensures that arriving fuels meet specified requirements. In addition, lab personnel are responsible for injecting additives into aviation fuel and testing selected packaged petroleum products.

On an annual average the 505<sup>th</sup> tested 9,703 samples. The breakdown of the samples tested was:

- 79% Aircraft fuels
- 21% Ground fuels
- 1% Packaged petroleum products

Customer workload distribution for samples tested was: 93% Defense Logistics Agencies, 5% Marine Corps, 1% Navy, and 1% miscellaneous.

505<sup>th</sup> Lab operates out of a 3,155 Sq/ft concrete building with 2,301 Sq/ft of lab work-space. It is resourced with \$183K of lab equipment and furnishings. Annually it operates at a cost of \$294K. Total operating costs exclude Military Labor Contracts (MLCs-Japanese workers) for six personnel. Because labor costs for MLCs are paid for by the Japanese Government, Japanese personnel salaries are at no cost to DoD in terms of dollars. Rather, they are compensated in accord with the U.S. basing agreement with Japan.

Comparative Analysis: Data collected regarding workload distribution from the 505<sup>th</sup> Lab was gathered from a manually generated log sheet. It may not be wholly accurate. Workload distribution data is not a required document for 505<sup>th</sup> Lab operations. On the other hand, Det 44 has an automated workload distribution tracking system.

505<sup>th</sup> is supported by 11 personnel compared to 4 at Det 44. 505<sup>th</sup>'s workload is 9 times larger than Det 44's total of 1, 117 tests. The workload of an individual at 505<sup>th</sup> is 3 times greater than that of Det 44 personnel (assuming equal distribution of sample testing).

The 505<sup>th</sup> facility was built in 1980 and underwent a major facelift in 1985. The building is 1/3 larger than Det 44's. Its interior is equipped with explosion-proof outlets, and gas lines piped-in from an outside source. It includes a break room, and showers and locker room for males and females. Det 44, on the other hand, is housed in a building with only standard household outlets. Gas samples are brought in manually from storage tanks located outside the building. It has only a single shared restroom.

Site Survey (See Figure 3. Copy of blueprint): A survey analysis of the 505<sup>th</sup> Lab was conducted to determine the availability of space and necessary modifications to accommodate Det 44. Det 44 Lab mission requires an inventory of equipment items not duplicated in the 505<sup>th</sup> Lab.

A review of the 505<sup>th</sup> Lab blueprint reflected the following square footage:

- Office/Administrative Area    370 sq/ft
- Rest Rooms                        318 sq/ft
- Mechanical Room                166 sq/ft

- Lab/analytical Area            2,301 sq/ft
- Total                                3,155 sq/ft

All 2,301 sq/ft of lab/analytical space in the 505<sup>th</sup> Lab is currently being used to process sample testing. However, some areas were identified as minimally used. Areas identified as minimally used are as follows:

- Lab Room #2                                230 sq/ft
- Aisle #3 left and right sides 200 sq/ft
- Total Available space                    430 sq/ft

Det 44's required equipment space is as follows:

- Chromatography                                72 sq/ft
- Titration Set-up                                72 sq/ft
- Hydrogen Content Counter                35 sq/ft
- Smoke Point Apparatus                    8 sq/ft
- Emulsion Apparatus                        16 sq/ft
- Purity Apparatus                                32 sq/ft
- Moisture Tester                                48 sq/ft
- Ball on Cylinder                                73 sq/ft
- Total required space                        356 sq/ft

With 505<sup>th</sup>'s total available space of 430 sq/ft and Det 44's requirement for 356 sq/ft, the consolidation of the two labs is feasible.

Modification Cost: Another step necessary for the transfer of Det 44's equipment and personnel into the 505<sup>th</sup>'s Lab is the cost of modifying the 505<sup>th</sup> lab. Modifications to the existing lab are necessary for the operation of Det 44's equipment. Necessary modifications are depicted on the next page (Figure 3). The cost estimate of these modifications came to a total cost of \$89.4K.



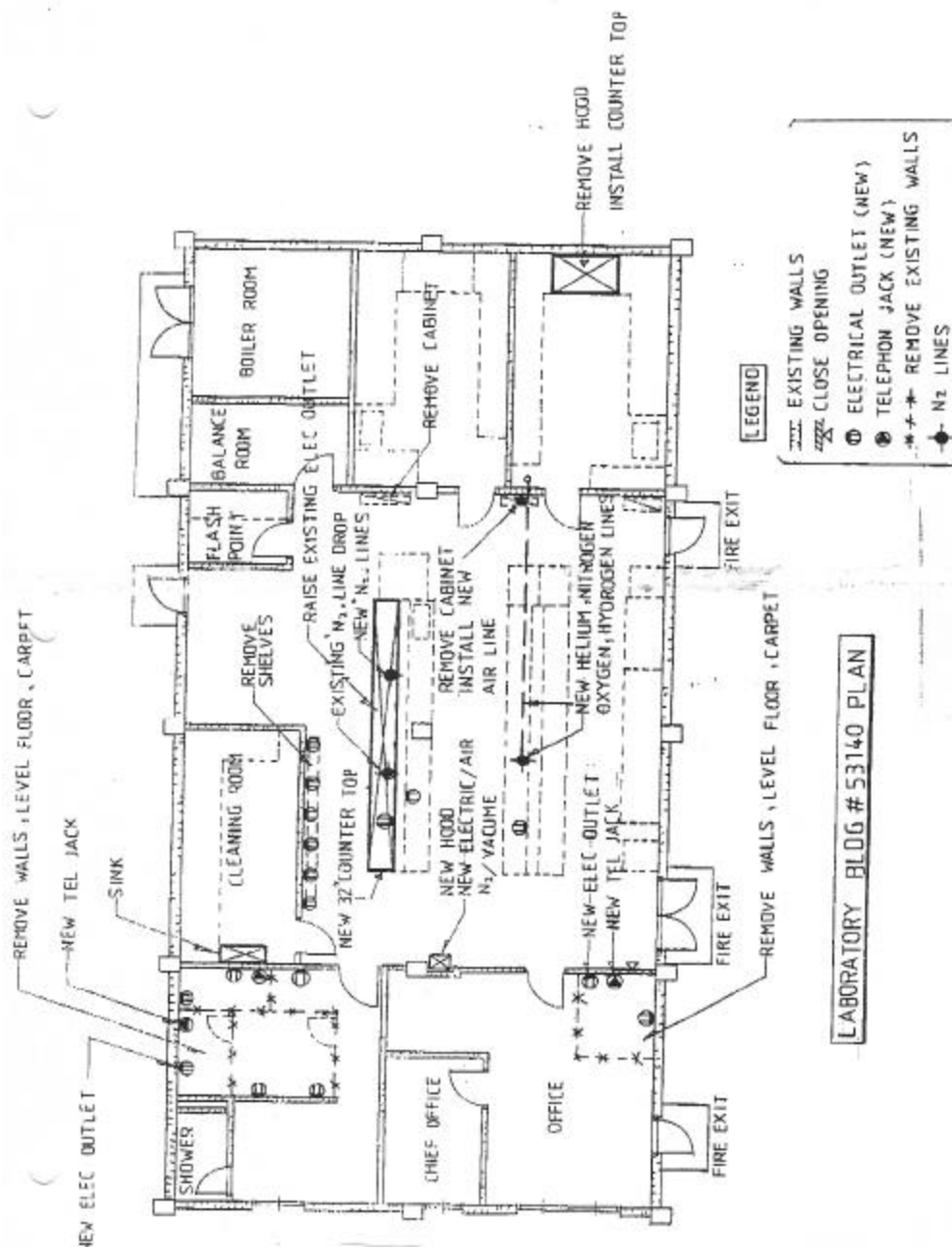


FIGURE 3. SITE SURVEY BLUEPRINT

## COST ANALYSIS

One of the three cited decision criteria was cost. Would locating both labs into one existing facility produce real dollar savings or improved operations? This cost analysis is based on a five-year projection for capturing costs and pay-backs. The following categories of costs are associated with the operations of labs:

Japanese & U.S. Agreement: The agreement between the Japanese and U.S. Government is unique. The Japanese Government owns the land in Okinawa and the fixed facilities on which the U.S. Government operates. Included in this agreement is an added stipulation for the Japanese Government to fund maintenance, utilities, Japanese employees' salaries, and construction of facilities. The U.S. Military, on the other hand, provides lab testing services for the Japanese Government free of charge. With the above stipulation, my analysis includes only cost information on U.S. personnel. It would not have been relevant to collect data on maintenance, utilities, and the salaries of Japanese employees, because they were at no cost to the U.S. Government.

Cost Data Analysis: I began my cost data collection by contacting the U.S. Army Cost and Economic Analysis Center (USACEAC) located in Washington D.C. The USACEAC is the generally accepted cost and analysis data center used by the Federal Government. The Army Finance Center, Pentagon also provided useful data that was not available in the USACEAC data bank, specifically the Cost of Living Allowance (COLA) for Okinawa, Japan.

The Yearly Cost Data (Table 2) depicts the rank/rating, yearly salary plus COLA, and the Total, representing the yearly cost of each listed military/U.S. Government employee. The "Source and Definition" section explains what each associated cost figure represents.

<u>Rank/Rating</u>	<u>Yearly Salary</u>	<u>Yearly COLA</u>	<u>TOTAL</u>
O-4	\$ 105,510.85 (MPA)	\$ 1,030.49	
	9,896.96 (OMA)	x12	
	<u>39.32 (OTHER)</u>		
	115,447.13	12,365.88	\$ 127,813.01
O-3	90,864.62 (MPA)	907.83	
	8,871.96 (OMA)	X12	
	<u>39.32 (OTHER)</u>		
	99,775.90	10,893.96	110,669.86
E-7	78,596.73 (MPA)	731.49	

	19,901.00 (OMA)	X12	
	<u>969.93 (OTHER)</u>		
	99,467.66	8,777.88	108245.54
E-6	61,144.46 (MPA)	667.36	
	12,848.90 (OMA)	X12	
	<u>823.94 (OTHER)</u>		
	74,817.30	8,008.32	82,825.62
E-4	46,908.86 (MPA)	570.49	
	7,976.36 (OMA)	X12	
	<u>811.44 (OTHER)</u>		
	55,696.66	6,845.88	62,542.54
GS-12	58,056.93 (ARMY)	621.25	
	<u>6,483.52 (OPM)</u>	X12	
	64,540.45	7,455.00	71,995.45
GS-11	47,377.32 (ARMY)	539.58	
	<u>5,244.08 (OPM)</u>	X12	
	52,621.40	6,474.96	59,096.36

Source and Definitions:

1. Yearly Salary Column figures are from the US Army Cost and Economic Analysis Center (Using aggregate (Avg) cost figures).
2. Yearly Salary Column:
  - MPA – Military Personnel Account, actual salary of the individual with benefits inclusive.
  - OMA – Operational Maintenance Army, associated administrative cost.
  - Other – Cost associated with training
  - ARMY – Army fund to pay Department of the Army Civilians, actual civilian salary.
  - OPM – Operational Personnel Management, allocation towards retirement.
3. Cost of Living Allowance (COLA) is based on rank and one dependent in Okinawa.

TABLE 2: YEARLY COST DATA TABLE:

From the Yearly Cost Data Table, four randomly selected are depicted on a bar chart below (Figure 4) to show the cost of maintaining each employee compounded yearly for five years. In addition, a solid line that bisects each year represents the modification engineer estimate of \$89K (cost of consolidating both labs). 5 Year Cost Chart (Figure 4) projects that the modification cost of \$89K can be recouped (payback period) within the first year on the selected ranks of Major, E-7, and E-6. The cost on the GS-11 position would be recouped early in the second year.

## 5 Year Cost Per Selected Ranks in \$

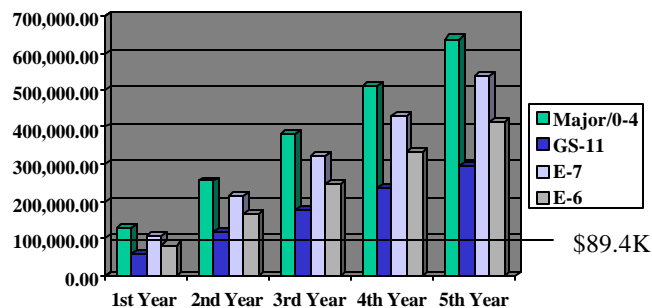


FIGURE 4. 5 YEAR COST CHART

Significant savings can be realized within the first and second year, depending on the position(s) that are eliminated due to redundancy. Further, the modification cost of \$89.4K would be recovered in a payback period of 1-2 years.

Note: Efficiency. I was unable to evaluate efficiency (Decision Criteria 2), because both labs did not track or keep records of customer satisfaction data. Both labs, however, did state that they had no problems in meeting mission requirements. Overall, there is no evidence of inefficient operations at either lab.

## CONCLUSIONS & RECOMMENDATION

**Conclusions:** This SRP provides three consolidation scenarios, along with the status quo. Cited decision criteria determine the feasibility of consolidating the two labs. Data collected and analyzed in this SRP supports the recommended action.

- Scenario 1: Co-locate the Army and Air Force personnel in the 505<sup>th</sup> Lab, but maintain separate management, organization and structure. The two labs, although under one roof, will continue to operate independently. Each will maintain its own workload and operation with no reduction in the number of personnel. However, the two labs will share equipment and space.
  - Advantages: No advantage over current operations.
  - Disadvantages:
    - Although there is available space for equipment, working and administrative areas will be too crowded.
    - Cost associated with the move include a \$89K modification cost with no payback.

Because Scenario 1 did not result in any cost savings and may possibly degrade operations due to limited space and crowded conditions, it is not recommend as a viable option.

- Scenario 2: Consolidation of both labs under the Air Force's lead command. The proposed organizational structure is depicted in Army/AF Lab1 Chart (Figure 5) next page. Under this proposal the GS-11 and the AF E-6 positions will be eliminated, and the commander (O-4 Major) of Det 44 will become the commander of the joint lab. The designated rating officer for the Major will be the 505<sup>th</sup> Battalion Commander (O-5 Lieutenant Colonel), with the senior rater being the Air Logistics Commander (O-6 Colonel). This would create a dual responsibility of missions for the AF Major.
  - Advantages:
    - A potential cost savings of \$141.9K per year (GS-11 + E-6 salaries per Yearly Cost Data Table).
    - Efficiency should not be affected since eliminated positions were redundant and current workload of both labs can be easily being satisfied by current lab technicians and chemists.
    - Cost of modifications of \$89K will have a payback period of less than one year, because cost savings for the first year amount to \$141.9K.
    - Space is available for consolidation of equipment and personnel.
  - Disadvantages: Many in the Air Force and Army community fear that combining organizations into a joint activity means loss of autonomy. Resistance to consolidation will naturally occur on both sides.

## ARMY/AF LAB1

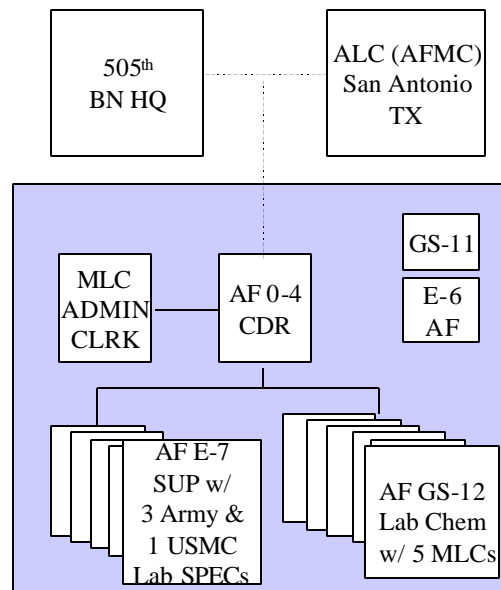


FIGURE 5. ARMY/AF LAB1 CHART:

- Scenario 3: Consolidate both labs and place the AF GS-12 as the lead Lab Supervisor, with the elimination of the AF 0-4, E-6, E-7, and the Army's GS-11. The proposed organizational restructure is depicted on Army/AF Lab 2 (Figure 6) next page. This scenario attempts to eliminate all redundant positions. The rating scheme will be the same for the GS-12 as it was for the AF Major in Scenario 2.
  - Advantages:
    - A cost savings of \$377.9K per year, based on the eliminated positions.
    - The cost of modifications \$89.4K will be recovered within the first year.
    - Space is available for consolidation.
  - Disadvantages:
    - Resistance from the Army and especially from the Air Force will occur, because the bulk of the cuts were AF personnel.
    - Efficiency maybe degraded because of the reduction of four personnel, which is equal to 26.7% of both organizations combined.

Although this scenario projects a large cost savings, the degradation in efficiency due to the 26.7% cut in manpower may exceed the capabilities of the remaining workforce to a degree where mission is affected adversely. I would not recommend this scenario as a viable option for consolidation.

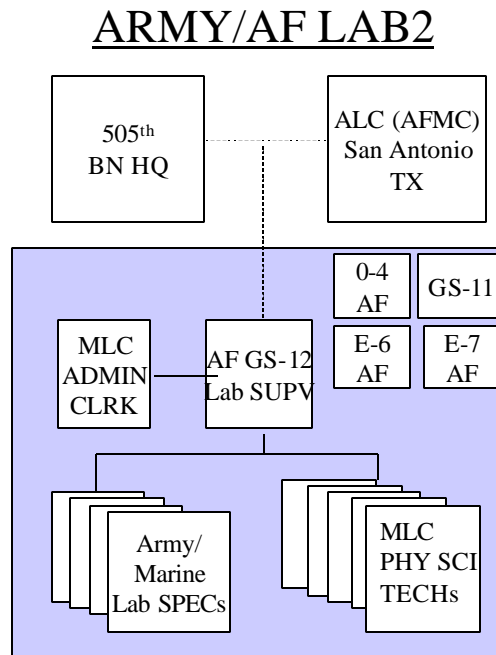


FIGURE 6. ARMY/AF LAB 2 CHART:

- Scenario 4: Status Quo. Maintain both labs as they are and not consolidate.  
Advantages: Cost avoidance. Modification cost of \$89.4K will not be necessary.  
Disadvantage: Space for consolidation is available and will not be used. Separate administrations and operations for similar missions in close proximity are redundant and thus inefficient.

Of the four scenarios evaluated, only Scenario 2 offers a viable option for consolidating both labs.

**Recommendation:** That the Assistant Deputy Under Secretary for Material and Resource Management Policy, direct the consolidation of both Aerospace Fuels, and relocate Detachment 44 to the 505<sup>th</sup> Quartermaster Battalion Laboratory in Okinawa, Japan. The joint lab should operate under Air Force lead as described in Scenario 2. A memorandum of Agreement should be developed between the Army and the Air Force to address the following:

- Service responsibility during peacetime and at war.
- New name for the joint laboratory.
- Mechanics of funding joint lab operations.
- Responsibilities of the Air Force Lab Commander and designation of rating officials.

### **STRATEGIC CONCLUSION**

This study can be related to a larger goal of eliminating redundancies and costs within DoD and national levels. With 24 U.S. Service laboratories worldwide, and countless similar commercial facilities, this particular case study can suggest guidelines for cost cutting and elimination of problems that can be applied at the strategic level. Many of the challenges that I deal with (efficiency criteria, inter-service challenges) in this micro study have general relevance to evaluating the feasibility of cost cutting and determining most efficient management, or consolidation of petroleum laboratory operations within services and commercial activities. Ultimately, this study can be used as a guide to achieve the strategic goals of our government: Eliminate excess infrastructure, reshape our military, pursue "jointness," optimize readiness, and save valuable dollars and resources that can be more efficiently used elsewhere.

WORD COUNT= 5,205





## ENDNOTES

<sup>1</sup> 1982 *Study of Petroleum Test Laboratories, Okinawa*, by the Joint Inter-service Resource Study Group (Pentagon, Washington, D.C., 1982), p.10-12.



## BIBLIOGRAPHY

- Army Cost and Economic Analysis Center. *Government Service Employee Wage and Salary Chart*. Pentagon, Washington D.C. 20 December 2003.
- Army Finance Office. *Base Pay and Cost of Living Chart*. Pentagon, Washington D.C. 20 December 2003.
- Hodges, Norman, Director Bulk Fuels, Statement of Work to Provide Contractor Advisory and Assistance Services for the Evaluation of the Service (Army, Navy& Air Force) and DLA Petroleum Laboratories. Memorandum for Army, Navy, Air Force, and DLA. Fort Belvoir, Maryland, 22 May 1998.
- Joint Inter-service Resource Study Group. *Study of Petroleum Test Laboratories, Okinawa*. Pentagon, Washington D.C. : U.S. Department of the Army, February 1982.
- Jones, Jeffery, Assistant Deputy Under Secretary. Assessment of Service Petroleum Laboratory Redundancies (OCONUS). Memorandum for Assistant Secretaries of the Military Departments. Washington D.C. 27 July 1994.
- Martell, Thomas, U.S. Army Petroleum Center. "505<sup>th</sup> Quartermaster Battalion." Briefing slides with scripted commentary. Fort Belvoir, Maryland, 25 January 1995.
- Process Action Team. *Assessment of Service Petroleum Laboratory Redundancies*. Washington D.C.: U.S. Department of the Army, 8 July 1994.
- Process Action Team. *1995 Staff Visit After Action Reports*. Troop Support Division for Sustainment, Army Deputy Chief of Staff for Logistics. Pentagon , Washington D.C. 28 OCT 1994.
- Questionnaire Surveys, Petroleum Laboratory Workload and Testing Capabilities from the USAF, Det 44, and Army 505<sup>th</sup> Quartermaster Battalion. Troop Support Division for Sustainment, Army Deputy Chief of Staff for Logistics. Pentagon , Washington D.C. October 1994.
- Robbins, Stephen P. *Organizational Theory*. Englewood Cliffs, NJ: Prentice-Hall. Third Edition. 3 March 1990.
- U.S. Department of Defense. *DoD 4140.25*, Volumes I-IV, Office of the Secretary of Defense, Washington D.C.: U.S. Department of Defense, January 1994.
- U.S. Department of the Army. *Military Handbook 200*. Military Standardization and Quality Surveillance Handbook for Fuels and Related Products. Washington D.C.: U.S. Department of the Army, 1 July 1987.
- Vasil, Judith, Director of Aerospace Fuels Management. "Detachment 44." briefing slides with scripted commentary. Kelly Air Force Base, Texas, 6 February 1995.

